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Hypnosis, hypnotizability, memory and involvement in films

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HYPNOSIS, HYPNOTIZABILITY, MEMORY AND INVOLVEMENT IN FILMS

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Abstract

Researchers have reported increased involvement in reading (Baum and Lynn, 1981) and music-listening (Snodgrass and Lynn, 1989) tasks during hypnosis. We predicted a similar effect for film viewing of greater absorption and involvement in an emotional (*The Champ*) versus a non-emotional (*Scenes of Toronto*) film clip. We also examined the effects of hypnosis and film valence on memory and state depersonalization. Our study is the first to use state dissociation to index response to hypnosis. We tested 121 participants who completed measures of absorption and trait dissociation and the Harvard Group Scale of Hypnotic Susceptibility and then viewed the two films (approx. 3min per film) after either an hypnotic induction or a non-hypnotic task (i.e., anagrams). State dissociation was evaluated at four points and recall was evaluated immediately after each film. Absorption and emotional response varied as a function of both hypnotic suggestibility and film valence. Highly hypnotizable participants reported more state depersonalization relative to less hypnotizable participants; however, we observed no significant correlation between hypnotizability and trait dissociation, in keeping with previous research (Kirsch and Lynn, 1998). Contrary to the ASCH, hypnosis failed to improve memory. As predicted, the emotional film was associated with more commission and more omission errors than the non-emotional film.

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Introduction

Movie watching is universal and increasing. Global box office for all films released in each country around the world reached $32 billion (USD) in 2011, and each international region experienced growth (e.g., a 3% increase in cinema screens worldwide since 2010; Motion Picture Association of America, 2012). In the US and Canada alone, over two-thirds of the population over two years of age viewed a film at the cinema at least once, and the average movie goer attended approximately six screenings. Outside of the cinema, 15 movies are rented each second from self-service vending kiosks (Redbox, 2012).

Why do people watch so many movies? One reason is that films evoke powerful emotional responses. These are frequently described as “absorbing,” “fascinating,” “riveting,” “intriguing,” “moving,” “evocative,” or “powerful.” If powerful emotion is the desired end, experiential immersion is the presumed means. Accordingly, films can provide potent stimuli for investigating individual differences in capacities for absorption and other variables associated with experiential involvement.

Experiential involvement may be highly imaginative or less imaginative. Hilgard (1970) defined imaginative involvement as openness to experience accompanied by suspension of belief and alterations in consciousness (e.g., expansion or narrowing). Highly imaginative involvement allows for temporary

absorption in fantasy-based experiences such as watching a play (Hilgard, 1979a) whereas less imaginative involvement permits absorption in concrete experiences such as reading a technical manual (Baum and Lynn, 1981). Predilection for highly imaginative involvement in particular has correlated with hypnotic responsiveness in observational and empirical research (e.g., Hilgard, 1965; Fellows and Armstrong, 1977). During highly imaginative experiences, highly hypnotizable individuals evince greater absorption operationalized as complete attentional involvement (Tellegen and Atkinson, 1974) than less hypnotizable people. Only a few studies however (e.g., Baum and Lynn, 1981; Snodgrass and Lynn, 1989) have used stimuli differing in imaginativeness to test the specificity of this relationship to high imaginative stimuli.

Baum and Lynn (1981) tested differences in absorption between high and low levels of hypnotizability for high imaginative and low imaginative reading materials. The authors found that high hypnotizable individuals became more absorbed in high imaginative passages (e.g., fictional narratives) but not low imaginative passages (e.g., scientific encyclopedia entries). These results support the specificity of hypnotizability in mediating absorption and involvement in high imaginative but not low imaginative stimuli.

In an effort to test this specificity using stimuli of a different modality, Snodgrass and Lynn (1989) presented classical musical pieces of equal length but differing imaginativeness to high and low, as well as medium, hypnotizable participants. In keeping with Baum and Lynn (1981), the researchers found that highly hypnotizable participants reported greater absorption than low

hypnotizable participants during highly imaginative musical pieces but not during less imaginative pieces. An identical interaction between hypnotizability and imaginativeness was observed for imagery elaboration. Medium hypnotizable participants did not differ significantly from either low or high hypnotizable participants across measures, suggesting that ability of hypnotizability to predict absorption in music extends across the spectrum of hypnotizability.

The present study seeks to further determine if previous findings related to the link between hypnotizability generalize to film clips presumed to differ in their capacity to elicit experiential absorption, as a function of emotional involvement. In recognition of the highly visual nature of film, we operationalize imaginativeness as evocative of fantasized emotional connectedness to or inclusion within the imagery presented rather than evocative of fantasy and mental images as in previous studies. We will present one highly emotionally involving and one neutrally valenced film clip to participants of high, medium, and low hypnotizability and evaluate self-reported absorption and emotional involvement in the clips. Finally, unlike previous studies, we will examine effects of hypnosis on absorption and emotional involvement in high and low emotionality stimuli. We hypothesize that hypnosis will enhance absorption and emotional involvement for high and medium hypnotizable participants above and beyond that reported by non-hypnotized high and medium hypnotizable participants across film clips.

Researchers have been using films since at least 1962 (Lazarus et al., 1962) to elicit temporary emotional and behavioral responses from participants.

Since that time, investigators have developed and refined clips able to elicit distinct emotions (e.g., Philippot, 1993). Comprehensive reviews (e.g., Rottenberg et al., 2007) indicate that most contemporary researchers have used films adopted by Gross and Levenson (1995), with many studies presenting a particular scene from the 1979 drama, *The Champ* (Zeffirelli, 1979) to elicit sadness. The ability of the scene to elicit sadness has prompted journalists to declare the film to be "the saddest movie ever made" (e.g., Chin, 2011) and motivated the use of this particular clip in the present research. Such a film would be expected to engage participants' experiential involvement in the clips viewed. Indeed, we predict that hypnotizability will be associated with emotional involvement and absorption in such a film as Hilgard (1970) observed that the strength of an individual's identification with fictional characters often predicted hypnotic responsiveness.

In addition to the primary aim of examining the generalizability of previous findings, the present study was designed to evaluate cognitive differences between non-emotional and emotional involvement. More specifically, we will examine the effect of movie clips' emotional valence on memory (e.g., emotional vs. neutral) for visual details immediately after the presentation of each clip. Memory for peripheral details appears to decrease substantially in terms of accuracy as emotionality increases (Heuer and Reisberg, 1992; Schmidt, 2004; Pezdek, 2003). Accordingly, we predict that memory for visual details will be poorer—as indexed by memory errors-- for emotional movie stimuli (*The Champ*) compared with relatively non emotional movie stimuli presented in the context of a clip of a silent bus tour of downtown Toronto

(*Scenes of Toronto)*. Participants' memories will be tested immediately after each clip for errors of omission and commission with a recognition task. Errors of omission will be operationalized as denial of the presence of a true detail, and errors of commission will be operationalized as affirmation of the presence of a fabricated detail. This procedure is similar to those of other studies that test for memory errors after film-viewing (e.g., Giesbrecht et al., 2007).

We will also examine the relationship of hypnosis and hypnotizability to memory errors. Although the American Society for Clinical Hypnosis (2010) lists "memory/concentration improvement" as a use of hypnosis, scant evidence supports the use of hypnosis in this context, as a sizable body of evidence indicates that although hypnosis can produce accurate recollections, any advantage for the use of hypnosis compared with non-hypnotic recall is more than compensated for by an increase in recall errors, false memories, and overconfidence in recall veracity (see Lynn et al., 2008 for a review). Accordingly, we hypothesize that hypnotizability will be positively associated with memory errors for peripheral details in both film clips.

Finally, hypnotic responses have been theoretically linked to dissociative processes (Hilgard, 1992), although the link between hypnosis and dissociation is controversial (Kirsch and Lynn, 1998). To evaluate the possibility that dissociative tendencies will disrupt encoding of information provided in a context of negative emotionality (Van der Kolk and Van der Hart, 1989; Gershuny and Thayer, 1999), we will evaluate the associations among hypnotizability, state and trait dissociation, and memory errors in emotional and non-emotionally involving

film clips. Although many studies have assayed the link between hypnotizability and dissociation (see Kirsch and Lynn, 1998), our study is the first to use a measure of state depersonalization (State Scale of Dissociation; Krüger and Mace, 2002) to index responsiveness to hypnosis.

Methods

Participants

Participants were 121 undergraduate students enrolled at Binghamton University (*n* women = 58, *n* men = 63), with a mean age of 19.36 years (*SD* = 1.67, range = 18 to 27 years). Forty-nine percent identified as white, 21% as Asian American, and 14% as Hispanic/Latino. 20% endorsed English as a second language. Participants were randomly assigned to either a hypnosis or control condition and tested in small groups ($n \cong 9$).

Measures

Absorption was measured with the Tellegen Absorption Scale (TAS; Tellegen and Atkinson, 1974). This brief self-report measure is comprised of 34 true-false items that assess propensity for high involvement in sensory and imaginative experiences. The TAS has a test-retest reliability of .91 and an internal consistency of .88 (Tellegen, 1982).

Dissociation was measured with the Dissociative Experiences Scale (DES-II; Bernstein and Putnam, 1986). The DES-II is a self-report inventory that assesses dissociative experiences in daily life (e.g., depersonalization, derealization, and psychogenic amnesia) with 28 Likert scale items. For each item, participants are asked to report the percentage of time an experience occurs, ranging from 0 to 100% in increments of 10%. The DES-II has strong internal

consistency and test-retest correlations ranging from .74 to .84 (Van Ijzendoorn and Schuengel, 1996).

Experimenters assessed hypnotizability with the Harvard Group Scale of Hypnotic Susceptibility, Form A (HGSHS:A; Shor and Orne, 1962). Adapted for group administration from the Stanford Hypnotic Susceptibility Scale, Form C (SHSS:C; Weitzenhoffer and Hilgard, 1959), the HGSHS:A is a standardized, 12-item self-report measure requiring approximately 50 minutes for completion. The HGSHS:A correlates with the individually administered SHSS:C at around .60 (Bentler and Roberts, 1963; Evans and Schmeidler, 1966) and has a test-retest reliability of .80 (Bowers, 1981).

State depersonalization was assessed with the depersonalization subscale of the State Scale of Dissociation (SSD; Krüger and Mace, 2002). The SSD consists of 56 nine-point likert scale items that measure self-reported state features of dissociative experiences. Eight items comprise the SSD's depersonalization subscale. The SSD has acceptable internal consistency and split-half reliability (Krüger and Mace, 2002).

Emotional response was measured with the Positive and Negative Affect Scale (PANAS-X; Watson and Clark, 1994). The PANAS-X asks participants to rate from 1 to 5 their present identification with 60 mood descriptors divided evenly between positive and negative valence. The PANAS has demonstrated excellent reliability and validity (Crawford and Henry, 2004).

The experimenters constructed a brief subjective experiences questionnaire for use in assessing involvement with film clips immediately after

their presentation. This questionnaire consists of four likert scale items instructing participants to rate from 1 to 5 (i.e., from *strongly disagree* to *strongly agree*) their agreement with statements indicative of emotional involvement (e.g., *I felt strong emotions while watching the clip),* undivided attention (e.g., *I paid attention to the entire film clip),* absorption (e.g., *The film clip was absorbing),* and interest (e.g., *The clip was very interesting to me)* during the clip.

Memory for scene-specific visual details was assessed with 16 true-false items asking participants to confirm or disaffirm statements about the presence of actual and fabricated visual details in the clip. For each clip, eight items assessed errors of omission (i.e., disaffirming the presence of an actual detail) and eight items assessed errors of commission (i.e., affirming the presence of a fabricated detail). Item content was distributed uniformly across the durations of both clips, and items across both clips were synchronized so that they drew from film content at identical times in the durations of both clips.

Stimuli

Participants watched two brief film clips of identical length (2min50sec). Clips were counterbalanced across small groups in both hypnosis and control conditions. The high imaginative movie clip (*The Champ*; Lovell and Zeffirelli, 1979) dramatized a young boy's powerful emotional reaction to the death of his father after a boxing match and has been shown to produce a transient state of strong sadness (Gross and Levenson, 1995). The low imaginative film clip consisted of footage of downtown Toronto, Canada taken during a bus and ferry

tour. All audio was removed from the clip. The clip was judged by the experimenters to be non-emotional but not uninvolving.

Procedure

Participants were tested in small groups in a large windowless room arranged to emulate a movie theater in both seating and presentation of stimuli. A large, blank screen allowed for cinematic display of the film clips via digital projector at the appropriate times. Upon each group's entry into the room, a single experimenter instructed each participant to sit at large table and complete a packet of measures. The packet included the TAS, the DES-II, a PANAS-X, and a SSD depersonalization subscale in randomized order. The PANAS-X and SSD subscale comprised baseline measures of mood and state depersonalization. After completion, the experimenter instructed participants to take individual seats amid the theater-style seating facing the blank screen. Participants were required to have a least one empty seat on both sides of them to prevent crowding and undue peer influence. The experimenter then administered the HGSHS:A. Immediately after each participant completed his/her HGSHS:A self-scoring booklet, he/she completed a second packet of state measures. This packet included a second PANAS-X and a second SSD depersonalization subscale in randomized order.

After all participants completed the second packet, procedure differed according to condition. Participants having been randomly assigned to the hypnosis condition prior to experimentation underwent an approximately seven-minute hypnotic induction. This induction included suggestions to relax deeply. Conversely, participants having been randomly assigned to the control condition

prior to experimentation were instructed to complete a packet of 50+ anagrams of various difficulty at a pace at which they felt comfortable. Participants were given seven minutes to complete as many anagrams as possible and were informed that their responses would not be graded in anyway. After either hypnosis or anagrams, participants were given standardized instructions to direct their attention toward the blank screen, and to focus their attention on the content that would soon be displayed. Participants were also informed that they would receive a memory test afterward.

The experimenter turned off room lights, receded from view, and presented the first film clip. Immediately after the clip, each participant was given a third packet to complete. This packet contained a third PANAS-X, a third SSD depersonalization subscale, a subjective experiences questionnaire, and the appropriate memory test items. After all participants completed the packet, the experimenter repeated the standardized instructions and presented the second film clip. Immediately after the clip, each participant completed a fourth and final packet. This final packet included a fourth PANAS-X, a fourth SSD depersonalization subscale, a second subjective experiences questionnaire, and the appropriate memory task items. After all participants completed their final packets, the experimenter debriefed them and concluded the experiment.

Results

A repeated measures MANOVA was conducted to examine effects of gender, hypnosis, clip order, hypnotizability level, and clip type on experiential involvement as measured by a composite of the four Subjective Experiences Questionnaire items. Results showed a nonsignificant main effect of gender, $F(4, 94) = 1.76$, $p = .144$, indicating no significant differences in involvement between male and female participants for either film clip. A significant main effect of film clip order was observed, $F(4, 94) = 6.31$, $p < .001$, · = .21; however, follow-up univariate analyses of variance indicated that the effect was limited to the emotional involvement item of the SEQ, $F(1, 97) = 10{,}09$, $p = .002$, · = .10. Subsequent analyses thus collapsed over gender and film clip order.

Multivariate within-subjects tests indicated a significant effect of clip valence, i.e., neutral or emotional, on experiential involvement, $F(4, 112) = 118.15$, $p < .001$, · = .81, showing that overall involvement differed between the two film clips. Follow-up a priori contrast analyses indicated that involvement as measured by each of the four SEQ indices (i.e., emotional involvement, absorption, attention, and interest) was greater for the emotional film than the non-emotional film.

Multivariate tests showed no significant between-subject differences between hypnosis and anagram conditions, $F(4, 112) = 1.14$, $p = .342$, indicating

that hypnotized participants reported no greater involvement than non-hypnotized participants in either film clip. Results indicated significant between-subjects differences in experiential involvement among hypnotizability levels, $F(8, 224) = 2.89$, $p = .004$, $\cdot = .09$, indicating that participants differed in involvement across film clips according to high, medium, or low hypnotizability level. Although a nonsignificant hypnotizability level by clip valence interaction was observed, $F(8, 224) = .587$, $p = .673$, follow-up a priori contrast analysis indicated that high hypnotizable participants reported greater emotional involvement than low hypnotizable participants in the emotional film clip but not in the non-emotional film clip, $p = .04$, as predicted. Contrast analyses indicated that high hypnotizable participants reported greater absorption than low hypnotizables in both the emotional film clip, $F(2, 115) = 3.52$, $p = .033$, $\cdot = .06$, and the non-emotional film clip, $F(2, 115) = 5.79$, $p = .004$, $\cdot = .09$. Notably, medium hypnotizable participants did not differ significantly from low hypnotizable participants in reported absorption for either film clip.

Repeated measures MANOVA was conducted to examine effects of hypnosis, hypnotizability level, and clip valence on memory errors as measured by a composite of omission errors and commission errors for both film clips. Absence of main effects allowed analyses to be collapsed across gender and film clip order. Results indicated no significant between-subjects differences between hypnosis and anagram conditions, $F(2, 114) = .060$, $p = .942$, or among hypnotizability levels, $F(4, 228) = .571$, $p = .684$, on memory errors after either film as measured by a recognition task. Neither hypnotized nor non-hypnotized

participants generated more memory errors for either film, and no differences in memory errors were indicated among hypnotizability levels for either film. However, results indicated a significant within-subjects effect of clip type, i.e., emotional or neutral, $F(2, 114) = 136.00$, $p < .001$, · = .71.

Follow-up univariate tests examined effects of clip type on omission errors and commission errors. A significant effect of clip valence was observed for omission errors, $F(1, 115) = 269.34$, $p < .001$, · = .70, and commission errors, $F(1, 115) = 36.68$, $p < .001$, · = .24. A priori planned contrasts indicated that both omission errors and commission errors were greater for the emotional film clip than for the non-emotional film clip.

Repeated measures ANOVA was conducted to examine effects of hypnosis, hypnotizability level, and time on state depersonalization as measured the depersonalization subscale of the State Scale of Dissociation. Absence of main effects allowed analyses to be collapsed across gender and film clip order. A significant main effect of time was observed, $F(2.26, 194.98) = 16.27$, $p < .001$, showing that participants' state depersonalization scores differed across time. Results showed a nonsignificant hypnosis by time interaction, $F(2.26, 194.98) = 1.943$, $p = .139$, indicating that hypnotized and non-hypnotized participants did not differ significantly across time.

Results indicated a significant hypnotizability level by time interaction, $F(2.26, 194.98) = 6.86$, $p < .001$, indicating that participants of different hypnotizability levels differed in state depersonalization across time. Post-hoc

contrast analyses indicated that high hypnotizable participants differed significantly from both medium and low hypnotizable participants immediately after administration of the HGSHS:A, $F(2, 115) = 10.33$, $p < .001$, · = .15; no differences among hypnotizability levels were present at baseline, $F(2, 115) = 1.427$, $p = .244$. Specifically, results indicated that high hypnotizable participants reported greater state depersonalization immediately after administration of the HGSHS:A than either medium or low hypnotizable participants.

Pearson product-moment correlations between trait measures DES-II, TAS, HGSHS:A, and subscales are presented in Table 1. A significant correlation of .25, $p < .01$, was observed between HGSHS:A score and the TAS total score. A correlation, $r = .27$, $p < .01$, was found between the HGSHS:A and the imaginative subscale of the TAS. DES-II total score did not correlate with HGSHS:A score, $r = .09$, $p > .05$. DES-II total and subscale scores correlated significantly with TAS total and subscale scores (see Table 1).

Discussion

The primary aim of the present study was two-fold. First, we sought to determine if high, medium, and low hypnotizables differed in measures of experiential involvement after watching a highly emotionally engaging film clip. Additionally, we sought to determine if such differences would be evident in response to a highly emotionally involving film clip but not to a neutrally valenced film clip. To do so, we measured differences in experiences of involvement among high, medium, and low hypnotizables after presentation of both a high and low imaginative film clip. Comparison of involvement indexes between *The Champ* and *Scenes of Toronto* suggests that our use of *The Champ* as a high imaginative stimulus was appropriate as participants responded to the film clip with greater involvement across all indexes (i.e., interest, attention, absorption, emotional involvement) than to *Scenes of Toronto.*

Previous studies (Baum and Lynn, 1981; Snodgrass and Lynn, 1989) examining differences among high, medium, and low hypnotizable participants' self-reported involvement in response to a high imaginative and low imaginative stimulus strongly suggested that differences between high and low hypnotizable participants in measures of involvement would be evident in response to *The Champ* and that they would do so only in response to *The Champ*. The results of the present study supported these predictions and allow us to further generalize the specificity of hypnotizability's association with imaginative involvement in

high imaginative contexts from reading and music-listening to movie-watching when high imaginativeness is conceptualized as a film's propensity to elicit emotional involvement. In keeping with Snodgrass and Lynn (1989) our results may support a continuum model of hypnotizability's association with involvement as differences in absorption and emotional involvement emerged between high and low hypnotizables but not between medium and low or medium and high hypnotizable participants.

Unlike previous studies, we tested the effect of hypnosis on involvement in both high imaginative and low imaginative film clips. We hypothesized that hypnosis would enhance involvement among high and medium hypnotizables across both film clips; however, we did not observe increased involvement among hypnotized participants for either film clip. Our result may be attributable to participant fatigue as our manipulation did not occur until late into the study; however, an absence of apparent order effects may argue against such an interpretation. Additionally, no suggestions to increase involvement were given due to concerns about responses influenced by social desirability and demand characteristics; thus, it may be that the hypnotic suggestions given were too nondirective to influence participant involvement in either film. Future studies may attempt to script hypnotic inductions with suggestions to increase involvement able to bypass effects of demand characteristics and social desirability and implement the manipulation at an earlier point in the experiment.

Future studies may investigate mediators and moderators of the association between hypnotizability and involvement in high imaginative stimuli.

For example, in context of film stimuli, movies often dramatize the lives of others, so both hypnotizability and absorption's relationships to empathy may warrant consideration. Wickramasekera II and Szlyk (2003) tested relationships among these three variables and reported significant positive correlations for each pairing. The in-context correlation between absorption and hypnotizability was found to be statistically contingent on empathy, and the authors suggested that empathy may partially mediate that relationship. Wickramasekera II (2007) replicated the empathy-absorption correlation and has interpreted the entirety of these findings to mean that individuals high in hypnotizability empathize more strongly as a means of more fully enacting hypnotic suggestions and achieving absorptive states. In context of the present study, it may be that high hypnotizable participants manifested a greater empathic connection to the content of *The Champ* and by doing so experienced richer involvement.

The results of the present study may be influenced by context effects. Unlike previous studies, participants were tested for hypnotizability in the same experimental context as testing with stimuli and measurements of involvement. Participants viewed film clips and reported involvement shortly after administration of the HGSHS:A. In keeping with the literature (e.g., Council and Kirsch, 1986), there is some chance that expectancies partially mediated observed relationships between hypnotizability and involvement. Even so, clear differences in self-reported involvement emerged in response to high and low imaginative film clips and a relationship between hypnotizability and involvement specific to the high imaginative film clip (*The Champ*) was also clearly apparent. Because

these results mirror those of previous studies not vulnerable to context effects, we conclude that the effect of context and associated situational mediators in the present is nevertheless minimal.

The secondary aim of the present study was to use films of differing valences to evaluate cognitive differences between non-emotional and emotional involvement. We investigated these differences by comparing memory errors of commission and omission for visual details between the film clips. As predicted, *The Champ* was associated with more errors in memory for peripheral visual details than *Scenes of Toronto.* Participants made more errors of commission as well as more errors of omission after watching *The Champ* than they did after watching *Scenes of Toronto*. Furthermore, although participants made a roughly equivalent number of omission and commission errors after watching the neutral film clip, participants made significantly more omission errors than commission errors after watching *The Champ.* These results are consistent with those of previous studies (e.g., Heuer and Reisberg, 1992; Schmidt, 2004; Pezdek, 2003) that have shown deficits in memory for peripheral details in contexts of increasing emotionality. Future studies may incorporate an amusing film clip from the set offered by Gross and Levenson (1995) of comparable evocativeness to *The Champ* in order to test for differences in memory errors between negative and positive emotional stimuli in addition to emotional and non-emotional stimuli.

The hypothesized link between hypnotizability and memory errors was not supported as neither hypnosis nor hypnotizability levels were associated with memory errors of either type for either film clip. Conversely, no improvements of

memory were observed; thus, the present study does not support the ASCH's statements that hypnosis improves memory and/or concentration, although we see no apparent detrimental effects either. These results thus add to a body of literature replete with mixed reports of the effects of hypnosis and hypnotizability on memory.

Our remaining results are difficult to interpret meaningfully. For *The Champ,* self-reported interest significantly predicted commission errors; however, effect size was small and implications of "interest" in the present study are unclear. Thus, speculation about the meaning of this relationship is unwarranted and awaits future investigation with a more refined operationalization of interest. The hypothesized link between dissociation and memory errors as proposed in the literature was only partially supported and the supportive result was not congruent with extant theory. Although some research (e.g., Giesbrecht et al., 2007) suggests that high dissociators make more errors of commission than normal and low dissociators, this effect has previously been evinced for emotional stimuli rather than non-emotional stimuli. The present results may suggest that the association between high dissociation and commission errors is not specific to emotional contexts; however, it is curious that no association emerged for the emotional context in the present study.

Analyses of intercorrelations revealed a correlation between hypnotizability and absorption consistent with previous literature (Tellegen and Atkinson, 1974; Nadon et al., 1991). Nonsignificant correlations between hypnotizability and trait dissociation/dissociative factor subscales do not readily

support hypothesized links between the constructs. The present results are consistent with those of other studies (e.g., Green & Lynn, 1995) that have not supported dissociative conceptualizations of hypnosis.

On the other hand, our results indicated that greater hypnotizability predicted larger magnitudes of increase in state depersonalization between baseline and the conclusion of the HGSHS:A hypnotic induction. It may be that state depersonalization is associated with an effect of hypnosis (e.g., sleepiness) rather than hypnosis per se and that hypnotizability partially moderates or mediates this relationship. Some studies have suggested a relationship between sleep and dissociative experiences (Mahowald and Schenck, 1992; Watson, 2001). Participant availabilities in the present study required that a large number of sessions take place in morning and at night when participant sleepiness may have been elevated. A future study may examine interactions between hypnotizability, sleepiness, and state depersonalization by administering the HGSHS:A to participants at selected times of day associated with different levels of wakefulness and then measuring state depersonalization. Nonetheless, a true relationship between state dissociation and hypnotizability may yet be present, and studies examining relationships between other measures and subscales of state dissociation and hypnotizability/hypnosis are warranted.

In conclusion, we observed differences between high and low hypnotizable participants for emotional involvement in the emotional film clip but not for the non-emotional film clip. However, we observed differences between high and low hypnotizables for absorption in both the emotional and non-

emotional film clips. Additionally, the emotionally valenced film clip was associated with more self-reported involvement and more memory errors in a recognition task than the non-emotional film clip, as predicted. No effect of hypnosis was observed for memory or for any index of involvement for either film clip. Importantly, the emotional film clip in the present study presented both visual and aural (i.e., actors' speech) content whereas the muted non-emotional film clip presented only visual content. This difference may have confounded our results. For example, some research has shown that variable auditory stimuli can disrupt visual short-term memory (Jones et al., 1993). Our observed differences in memory errors between film clips may not have arisen from interference effects of clip valence on content encoding but rather from distraction effects of audio content on attention to the accompanying visual scene. Future studies should present an emotional and non-emotional film clip of comparable audio content (e.g., both muted) in effort to control for these effects.

Table 1.

Intercorrelations for Hypnotizability, Absorption, and Trait Dissociation.

	HGSHS	TAS	DES-II
HGSHS	____	.250**	.086
TAS	.250**	____	.600**
DES-II	.086	.600**	____

Note. *N* = 121. HGSHS:A = Harvard Group Scale of Hypnotic Susceptibility, Form A; TAS = Tellegen Absorption Scale; DES-II = Dissociative Experiences Scale.

** $p < .01$, two-tailed.

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